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MOVEMENT OF GASES THROUGH SAND AND GRAVEL

S. V. Kalinin
Submitted 17 Jun 1950

[The following is a summary of the concluding section of an article written by S. V. Kalinin, Institute of Mechanics, Academy of Sciences USSR, based upon a lecture given by him in May 1947 at the Committee of the Department of Technical Sciences, Academy of Sciences USSR.]

Recent experimental investigations have been conducted which show that L. S. Leybenzon's proposed laws governing the motion of gases through porose media are completely applicable in studies of the motion of gases through very fine small-grained quartz sands, particularly through the fine sands of the Sub-Moscow coal fields. (See L. S. Leybenzon's articles, "Motion of Gases in Porose Media," Neftyanoye Khozyaystvo, No 10, 1929, No 8 and 9, 1930; his book published 1947.)

As a result of these investigations, it has been confirmed that the law governing the distribution of pressures squared along the pipe line of the stratum is applicable. Comparison of the experimental data with the calculated data, obtained according to the scheme based on the replacement of the nonstationary process by successive displacement of the stationary flow states, permits one to employ the formulas of this scheme for determining the minute-by-minute yield during flow from the stratum bed (draining of the bed) and for determining the total quantity of gas flowing out of the oil bed.

These experiments were conducted by the author and workers from the Moscow State University, Yu. M. Ivanov, S. A. Sadekov, A. A. Pimkin, N. V. Sedel'nikov, who were assisted in consultations with D. S. Vil'ker. I. A. Charnyy and I. O. Vlasov aided the author in handling the experimental data.

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